considerable daño económico a la agricultura, para cuyo control existe un grupo separado de pesticidas: preparaciones herbicidas.

Los herbicidas son agentes de protección química que previenen el desarrollo de malezas. Entre los herbicidas, los compuestos orgánicos que contienen halógenos y los productos fitosanitarios a base de sulfonilureas tienen la mayor importancia práctica. Las cantidades residuales de estas sustancias, que son xenobióticos, persisten durante mucho tiempo en el medio ambiente y tienen un efecto negativo directo sobre los objetos biológicos en períodos cortos de tiempo, así como a largo plazo. El método más prometedor para la remediación del suelo para destruir xenobióticos es la biodegradación dirigida. El objetivo del trabajo es estudiar las dinámicas de crecimiento y desarrollo de las culturas más activas. Las cepas fueron revisadas por sus características culturales, morfológicas, fisiológicas y bioquímicas, estas cepas fueron asignadas a los géneros de *Bacillus sp.* y *Pseudomonas sp.*

La dinámica de la conversión de xenobióticos en un cultivo periódico se estudió utilizando métodos HPLC-MS y GC, utilizando pesticidas de metsulfuron-metil y 2,4-D (2-etilhexil éter) como un sustrato de crecimiento destructor de bacterias. Durante los primeros 5 días, se observó una disminución activa en la concentración de xenobióticos, luego la concentración aumentó rápidamente, a un valor inferior al original en un 15%, la descomposición adicional de los xenobióticos procedió a una velocidad constante-lenta debido a la fase estacionaria del cultivo. En el vigésimo día de cultivo, la cantidad residual de xenobióticos constituyó unos 8%, aunque no se desapareció por comleto.

Por lo tanto, en el curso de la investigación, se ha establecido que las bacterias aisladas se pueden usar en las tecnologías de remisión de suelos contaminados con pesticidas basados en 2,4-D (2-etilhexil éter) y metsulfuron metilo.

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DIHYDROQUERCETIN

Dihydroquercetin – vegetable matter, which can be found in conifers of the Siberian or Dahurian larch, followed by further fine cleaning. These larch breeds grow in ecologically clean regions of Siberia and Baikal.

The molecular formula of Dihydroquercetin is C15H12O7. Its IUPAC name is (2R, 3R) -2- (3,4-dihydroxyphenyl) -3,5,7-trihydroxy-2,3-dihydrochromen-4-one. International unlicensed name is TAXIFOLIN but also it can be named as Distylin [1].

Dihydroquercetin is a pale yellowish powder with a bitter taste and woody smell. Dihydroquercetin is highly soluble in alcohols, insoluble in nonpolar solvents (Hexane, chloroform). The melting point of dihydroquercetin is 234-236°C [3].

Dihydroquercetin is widely used in food, pharmaceutical, cosmetic, agricultural, dairy industries and so on. Dihydroquercetin has antioxidant, anti-inflammatory, reproductive activity, which makes it possible to be successfully used in the production of biologically active food additives, medicines, food, cosmetic products, animal feed additives, plant growth stimulants [1].

Taxifolin has no analogues in the world. It is used as an antioxidant in the wine industry for artificial ageing of cognacs and wines, in the food industry as a natural preservative, for example, to increase the protective antioxidant, anti-moldy and anti-yeast activity [2].

Rationale for the use of dihydroquercetin in production:

1. To increase shelf life. It was found that dihydroquercetin helps to increase the shelf life of dairy products in 1.5 – 3 times, interrupting the reaction of self-oxidation of food components, inhibiting the growth of microorganisms in products already exposed to the oxidation process.[3]

2. To increase biological value. Lipids of milk and dairy products are subjected to free radical oxidation during processing and storage, which leads to a decrease in quality and biological value. In addition, oxidized lipids affect the toxicological and microbiological safety of dairy products, and their consumption can cause pathological changes in the body. As an antioxidant, dihydroquercetin helps inhibit the process of peroxidation, which not only increases the shelf life, but also increases the biological value of dairy products.

3. To provide functional properties. It is known that the process of fat oxidation can lead to the emergence of substances with toxic and carcinogenic effects, the most dangerous of them are free radicals. Dihydroquercetin is a substance, the main feature of which is the ability to intercept and bind free radicals and, thereby, prevent the development of pathogenic processes in the body. The introduction of dihydroquercetin in the formulation of food contributes to the inhibition of free radical processes and lipid peroxidation of cell membranes.

4. To use as a natural antioxidant. Current trends in healthy eating are such that preference is given to natural products rather than complex chemical compounds. Dihydroquercetin is a bioflavonoid extracted from natural vegetable raw materials – the lump part of larch wood. Numerous studies have confirmed that dihydroquercetin is non-toxic, physiologically harmless for the human body [1].

There is a rational question why it is not widely used industrially as it has so many advantages. The answer is that Taxifolin is expensive. The cost for one gram of high-purity product (from 96 to 98 % mass) in the same regions is from 9000 up to 12,000 $. Moreover, there are some studies that need to be carried out before applying to different types of products. For example, how it interacts with other supplements and how it generally affects people's health. The results obtained should guarantee the safety of the human organism.

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